and thereby to let only so large quantities of energy be set free as just suffice to satisfy the heat absorption capacity of the combustion chamber, so that thus an excess of energy cannot originate.

If this chain of reasoning be regarded as correct, then, with the object of economical employment of the fuel, tho pro-heating of the gas and air must be driven as far aw possible, as one can importantly increase the amount of energy which is won from the fuel, owing to the increased available heat of the gaseous media.

Now, a limit is placed on the extent of such preheating by tho temperature of the gases drawn oil from tho combustion chamber, since if the flame be only heated to 1,700" the ganon preheated through its means cannot well be heated higher than 1,600° to 1,050°.

In opposition to this theory it lias, however, boon shown in practice that by such high preheating in many furnaces the limit is overstepped in which the best results have been achieved. It has been observed that by too strongly preheating gas and air the production of the furnaces rather goon down than rises, whilst the chambers, especially in their upper portions, become overheated, BO that the checkers molt and even the arches of the chambers threaten to sink, which must have as a consequence the shutting down of tho furnace. One has further remarked that it is very difficult and requires very much time to again bring such highly-heated chambers to lower temperatures by usual means, and one is compelled to provide special cooling openings in the ports which load to the chambers and through which cold air can bo led into the same if they stand in direct communication with the chambers.

This arrangement may, from the point of view of frugal economy of heat, be regarded as totally faulty. It must, however, be retained until one has succeeded in producing the correct equilibrium between the heat production and consumption, somehow or other by the previously mentioned methods, for the diminution of the amounts of gas and air.

So long as the working of the furnace is damaged by too high preheating one dare not em ;>loy it, and let it be assumed from the following calculations tl mt the degree of preheating